



Department Source: Public Works

To: City Council

From: City Manager & Staff

Council Meeting Date: October 17, 2016

Re: Authorize Battery Electric Bus Lease Agreement with BYD Motors, Inc.

## Executive Summary

Authorizing the City Manager to execute a Bus Lease/Finance Agreement with BYD Coach and Bus, for five (5), 40-foot, battery-electric buses. The term of the agreement is for twelve (12) years from the time of delivery, estimated at November 4, 2016. The City will own the buses at the end of the agreement term. The monthly lease payment of \$4,988 per bus will be an operating expense from the University Shuttle account budget.

## Discussion

In November of 2015, the Transit Division began operating a 40-foot BYD battery-electric bus on the City's COMO Connect fixed route service. This bus was procured via an evaluation lease agreement approved by Council in August of 2015. The bus has performed optimally through all driving and weather conditions, and has far exceeded expectations in maintenance and operating costs. To date, this bus is saving approximately 70% in maintenance costs and 50% in energy costs in reference to comparable diesel buses in the fleet.

The 12,000 mile preventative maintenance is typically the most expensive required service performed on our buses. Since electric buses require no engine or powertrain fluids, filters and associated maintenance, the typical cost to perform this preventative maintenance service on the electric bus is \$350. On a diesel or CNG bus, the same service interval costs more than \$1,000. Additionally, electric buses require no emission filtration systems which have become one of the most consistent and expensive costs in operating diesel buses purchased after 2010. It is also projected that the regenerative braking system will have double the life of diesel and CNG brake systems. The batteries on BYD electric buses are fully warranted for twelve years.

Transit's current fleet of heavy duty buses consist of thirty-three diesel engine and two CNG engine vehicles. Seventeen of these buses are 2001, 2000 and 1995 model year, and have exceeded the FTA determined "useful life" standards. While still functional and safe to operate, these buses will continue to see high dollar maintenance costs due to age, such as engine and transmission replacements. Engine replacements can range from \$17,000 to \$20,000 each. Fourteen diesel buses in the fleet are 2010 model year or newer. These buses are also showing very high, and unanticipated, maintenance costs due to filtration systems required by new 2010 emissions standards. In February of 2015, Transit purchased two CNG heavy-duty buses which have been in operation since April. Transit will take delivery of three 30 foot battery-electric buses in November.



# City of Columbia

701 East Broadway, Columbia, Missouri 65201

The five battery electric buses included in this agreement are 2015 model year, BYD K9, 40 foot buses. These buses were originally leased by another Transit agency who determined the buses were too small for the high ridership route to which they were originally deployed. BYD agreed to trade the buses in for 60-foot articulated buses for this agency, and now is offering the 40 foot buses to Columbia at a significantly reduced price. The current price for a new K9 is \$780,000. This contract will purchase each bus for \$620,000, plus an annual interest rate of 2.5%. The buses will be painted with the current color scheme for Columbia's fleet and ancillary equipment will be installed upon delivery.

The Public Works Department has set a Strategic Plan goal to “operate at 50% electric fleet in Fixed Route service, during peak service, by 2019.” This agreement, coupled with expected federal grant funding, should help the department reach this goal a year early.

## Fiscal Impact

Short-Term Impact: Two years of lease payments for the five electric buses would total \$598,560. It is projected that this expense would be offset by the savings in fuel and maintenance expenses.

Long-Term Impact: The following ten years of lease payments would total \$2,992,800. It's projected this expense would be offset by the savings in fuel and maintenance expenses.

## Vision & Strategic Plan Impact

### Vision Impacts:

Primary Impact: Transportation, Secondary Impact: Community Facilities & Services, Tertiary Impact: Environment

### Strategic Plan Impacts:

Primary Impact: Operational Excellence, Secondary Impact: Infrastructure, Tertiary Impact: Social Equity

### Comprehensive Plan Impacts:

Primary Impact: Mobility, Connectivity, and Accessibility, Secondary Impact: Livable & Sustainable Communities, Tertiary Impact: Environmental Management

## Legislative History

Date	Action
8/03/2015	Res. 128-15-Authorizing battery bus evaluation program agreements with BYD Coach and Bus Inc. relating to the lease of one (1) 40-foot electric bus and three (3) 30-foot electric buses

## Suggested Council Action

Authorize the City Manager to execute a Bus Lease/Finance Agreement with BYD Coach and Bus, for five (5), 40-foot, battery-electric buses.